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(71) Applicant (for all designated States except US): **CLIFF PLASTIC PRODUCTS LTD** [GB/GB]; Evershed Court, Fairlight Avenue, Telscombe Cliffs, East Sussex BN10 7BU (GB).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **SCHAAKE, Henk** [NL/NL]; Hooizolder 258, NL-9250 CE Drachten (NL).

(74) Agent: **FRANK B. DEHN & CO.**; 179 Queen Victoria Street, London EC4V 4EL (GB).

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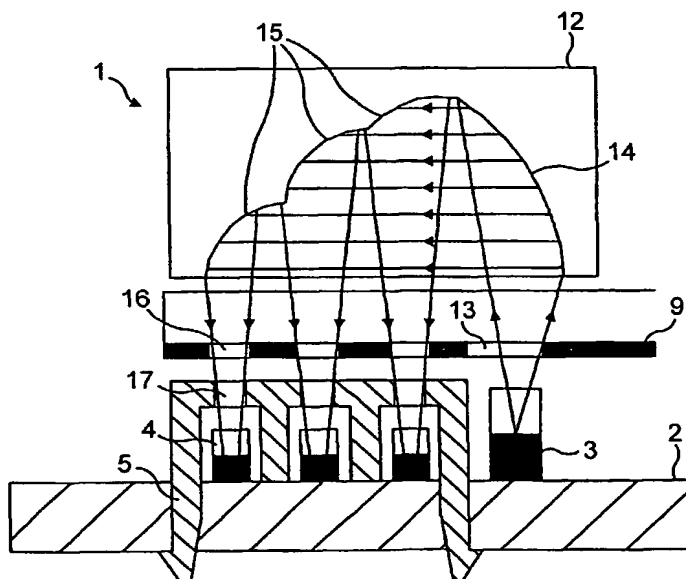
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(54) Title: OPTICAL CONTROLS



(57) Abstract: An optical control in the form of a rotary optical encoder includes a Gray code generating disk (9), a light source (3), a series of three light detectors (4), and an apertured cover (5) arranged over the light detectors (4). The control further includes a reflector (12) which redirects the light from the light source (3) to the detectors (4). The reflector (12) comprises a first parabolic reflective surface (14) which reflects the incident light from the light source (3) into a number of parabolic secondary reflective surfaces (15), each of which reflects and concentrates the light through the apertured cover (5) towards a particular light detector (4).

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 03/01524

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G01D5/347 G01D5/249

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 G01D F16L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 189 035 A (AGILENT TECHNOLOGIES INC) 20 March 2002 (2002-03-20)  the whole document	1,10,11, 56,58, 63-68
X	US 6 278 107 B1 (GAUMET DANIEL) 21 August 2001 (2001-08-21) the whole document	1,2, 16-18,56
X	GB 2 122 826 A (NMI LTD) 18 January 1984 (1984-01-18) the whole document	1-5,56
X	US 4 713 541 A (RENAUD JEAN-MARIE ET AL) 15 December 1987 (1987-12-15) the whole document	1-4, 14-16,56
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

25 November 2003

Date of mailing of the international search report

02.12.03

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Ramboer, P

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 03/01524

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 198 35 972 C (KOSTAL LEOPOLD GMBH & CO KG) 20 January 2000 (2000-01-20) abstract; figures ---	1-5,56
A	WO 84 01824 A (FOXBORO CO) 10 May 1984 (1984-05-10) abstract; figures ---	1,51,56
X	DE 200 11 490 U (IC HAUS GMBH) 15 November 2001 (2001-11-15)  the whole document ---	1,10,11, 56,58, 63-68
A	US 5 069 547 A (HUGGINS RAYMOND W ET AL) 3 December 1991 (1991-12-03) abstract; figures ---	26-49
A	US 5 585 924 A (SCHNEIDER ERWIN ET AL) 17 December 1996 (1996-12-17) abstract; figures 3,4 ---	39-49
A	FR 2 697 910 A (ONERA (FR);AEROSPATIALE) 13 May 1994 (1994-05-13) page 19, line 32 -page 21, line 29; figures ---	26-43
A	FR 2 214 389 A (SODERN) 9 August 1974 (1974-08-09) the whole document ---	44-49
A	DE 196 51 771 C (TRW FAHRZEUGELEKTRIK) 16 April 1998 (1998-04-16) the whole document -----	26,29-38

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/GB 03/01524

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:  
1.claims:1-25,50-68: Constructional details of an optical controller
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
2.claims:26-49: Improvements to codetracks to cope with tolerances in the manufacturing of an optical controller

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

International Application No. PCT/GB 03/01524

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-25,50-68

Constructional details of an optical controller

2. Claims: 26-49

Improvements to codetracks to cope with tolerances in the manufacturing of an optical controller

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 03/01524

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